



Agency for Healthcare Research and Quality
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NATIONAL
GUIDELINE
CLEARINGHOUSE

General

Guideline Title

Common infections in the long-term care setting.

Bibliographic Source(s)

American Medical Directors Association (AMDA). Common infections in the long-term care setting. Columbia (MD): American Medical Directors Association (AMDA); 2011. 46 p. [68 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: American Medical Directors Association (AMDA). Common infections in the long-term care setting. Columbia (MD): American Medical Directors Association (AMDA); 2004. 34 p.

Recommendations

Major Recommendations

Note from the American Medical Directors Association (AMDA) and the National Guideline Clearinghouse (NGC): The original full-text guideline provides an algorithm on "Common Infections" to be used in conjunction with the written text. Refer to the "Guideline Availability" field for information on obtaining the algorithm, as well as the full text of the guideline, which provides additional details.

Recognition

Because frail elderly patients are at a higher risk of death and complications from infectious diseases, prompt recognition, assessment, and treatment of infections are imperative.

Step 1

Does the patient have a change of condition that suggests the presence of an infection?

Infection may present with localized symptoms or with generalized, nonspecific symptoms. Table 4 in the original guideline document lists condition changes that may indicate infection in a long-term care (LTC) patient.

The nursing assistant caring for the patient should promptly notify the nurse on duty of any condition change that is suggestive of infection. The nurse, in turn, should assess the problem in a timely fashion. The focus of the initial nursing assessment may depend on the specificity of the observations or symptoms that suggest the presence of an infection (see Table 5 in the original guideline).

Before contacting the practitioner, the nurse should review the patient's chart and gather relevant information such as vital signs, recent lab reports, and medications ordered.

Recognition of Fever in the LTC Setting

As many as one-third of elderly patients with acute infections may present without a robust febrile response. Basal body temperature in the frail elderly may not be the "normal" value of 98.6°F (37°C).

Determination of basal temperature will allow staff to determine whether the current temperature is 2°F above baseline. It is advisable to keep a record of each patient's basal temperature in the medical record in a place that will not be thinned.

Table: Criteria for Defining Fever in the LTC Setting

- Increase in temperature of equal to or greater than 2°F (1.1°C) from baseline
- Two or more measurements of oral temperature equal to or greater than 99°F (37.2°C) or rectal temperature equal to or greater than 99.5°F (37.5°C)
- Single measurement of temperature equal to or greater than 100°F (37.8°C)

Adapted from High et al. Clinical practice guideline for the evaluation of fever and infection in older adult residents of long-term care facilities: 2008 update by the Infectious Diseases Society of America. Clin Infect Dis 2009;48:149-171.

Assessment

Step 2

Perform a history and physical examination, and order appropriate laboratory tests.

Appropriate clinical evaluation, including diagnostic testing, should be done promptly in all patients with suspected symptomatic infection, unless an advance directive or the expressed wish of the patient or family explicitly limits such intervention. The Infectious Diseases Society of America (IDSA) recommends a comprehensive evaluation by a registered nurse (RN) if infection is suspected. This evaluation may include abdomen, chest, conjunctiva, heart, hydration (weight), indwelling devices, mental status, oximetry, perineal and perirectal skin (including scrotum), pressure areas on back, review by systems, throat, and vital signs, depending on the patient's presentation. Facilities need protocols to ensure good assessment. Consider performing appropriate lab tests (e.g., complete blood count with differential) if infection is suspected.

When considering initiating antibiotic therapy, it is important to obtain cultures, if possible, because of the prevalence of multi-drug resistant organisms (MDROs) in the LTC setting (see Box 1 in the original guideline document). The white blood count in elderly patients may not rise significantly. To optimize antimicrobial therapy, efforts to identify a specific etiology and obtain susceptibility should be considered.

Table 8 lists in the original guideline document suggested elements of the diagnostic workup for the most common categories of infection in the LTC setting.

Wound Infections

Odor is common on wound dressings and does not always indicate the presence of infection. Tissue biopsy or aspiration sampling is the "gold standard" for culture of wound tissue infection and is especially important in the presence of serious infection, systemic toxicity, or poor response to initial therapy. However, swab culture is the most common technique for determining the resistance pattern of wound pathogens (readers may find it helpful to refer to AMDA's clinical practice guidelines on pressure ulcers).

Broad-spectrum antibiotics may be used as empiric therapy, potentially increasing costs and the risk of adverse drug reaction (ADR). The inability to focus and/or de-escalate antibiotic therapy when culture results are available will increase the risk that resistant organisms will be selected.

Step 3

Assess whether the patient's condition warrants transfer to a hospital.

Avoid hospitalization of LTC patients to the extent possible.

Transfer to a hospital may be appropriate (if it is consistent with the patient's directives) when any of the following conditions exist:

- The patient's vital signs are unstable, and the patient or family desires aggressive intervention.
- Critical diagnostic tests are not available in the facility in the required time period.
- The scope or intensity of the required monitoring or treatment is beyond the facility's capacity.
- Specific infection prevention measures are not available in the facility.

Step 4

Assess whether the patient's condition warrants implementation of heightened infection control precautions.

The U.S. Centers for Disease Control and Prevention (CDC) recommends applying a two-tiered system of infection precautions consisting of (1) standard precautions and (2) transmission-based precautions.

Standard precautions should be applied to all patients at all times in health care settings. Standard precautions emphasize hand hygiene; use of gloves and gowns when there is potential for exposure to body fluids or when touching bodily fluids, nonintact skin, or moist body areas (e.g., mucous membranes); masks, eye protection, and gowns (when splashing of body fluids is likely); and avoidance of needlestick and other sharps injuries.

Transmission-based precautions should be used for patients with documented or suspected transmissible infectious diseases that cannot be contained using standard precautions. Staff should consider pre-emptive implementation of transmission-based precautions in the presence of uncontained secretions.

Treatment

Step 5

Treat the symptoms of infection.

To the extent possible, tailor treatment to the patient's symptoms and signs. For example, if the patient is dyspneic or hypoxic, administer oxygen and treat as needed for wheezing or congestion.

Provide supportive measures for patients with a suspected or confirmed infection.

Comfort measures and interim treatment for a suspected infection may begin while assessment of the problem continues.

- Cover the patient with a blanket if he or she feels cold.
- If the patient is feverish, remove blankets or apply a cool cloth or ice packs to the forehead.
- Increase fluid intake, if feasible, to prevent volume depletion. Monitor and assess intake and output.

Fever should be treated if:

- It is causing the patient discomfort, or
- The patient shows signs of hemodynamic instability (e.g., pulse rate greater than 100 beats per minute or hypotension)

Step 6

Prescribe appropriate antibiotic therapy.

Treatment with antibiotics is appropriate when the practitioner determines on the basis of an evaluation that the most likely cause of the patient's symptoms is a bacterial infection. Consider the patient's general condition, prognosis, advance directives, and expressed patient or family preferences when determining whether to proceed with antibiotic treatment.

For specific viral or fungal infections, antiviral or antifungal agents may be warranted. Individualize the choice of antibiotic (see Appendix A of the original guideline document for sources of guidance on appropriate antibiotic selection).

Monitoring

Step 7

Monitor the patient's response to treatment.

Direct-care staff should closely monitor each patient who is being treated for an infection. Practitioners should provide nursing staff with information about what to look for as they care for the patient and when to report their observations to a nurse as well as information about any

changes anticipated in the patient's care plan.

Step 8

Take appropriate steps to contain an identified outbreak of the infection.

Table: Steps Involved in Recognizing an Outbreak of Infectious Disease

1. Confirm the diagnosis in the index patient.
2. Develop a system for finding suspected cases, including a uniform case definition to be used in chart review and patient evaluation.
3. Using the case finding method, perform a chart review and prospectively follow suspected new cases.
4. Determine whether the outbreak is a "pseudo-outbreak" (i.e., positive lab results in the absence of clinical disease) that has been recognized as a result of a change in procedures or surveillance rather than a true increase in cases of the infection.
5. Facilities need to have policies and procedures in place for common outbreak pathogens.
6. Inform appropriate administrative staff (e.g., director of nursing, all department heads, medical director, attending physicians) of isolation procedures, if required.
7. Seek assistance in managing the outbreak from the local health department or an infection preventionist.
8. Maintain a line list for each case and report the outbreak to the appropriate public health authority, if applicable.

Adapted from High et al. Clinical practice guideline for the evaluation of fever and infection in older adult residents of long-term care facilities: 2008 update by the Infectious Diseases Society of America. Clin Infect Dis 2009; 48: 149-171.

Step 9

Implement an immunization program for all facility patients.

Influenza

To increase the number of LTC patients who are vaccinated against influenza, the Centers for Medicare and Medicaid Services recommends that facilities use standing orders, with patient or caregiver consent, to administer annual flu vaccinations to current patients and new admissions during the flu season.

Pneumococcal Vaccination

All persons should receive pneumococcal vaccine at age 65. Those who were vaccinated before age 65 should receive another dose at age 65 or later if at least 5 years have passed since their previous dose. Those who receive the vaccine at or after age 65 should receive only a single dose. For most persons for whom pneumococcal vaccine is indicated, the Advisory Committee on Immunization Practices (ACIP) does not recommend routine revaccination.

Tetanus, Diphtheria, and Pertussis Vaccines

For adults aged 65 years or more, tetanus diphtheria vaccine (Td) is the recommended vaccine formulation. For adults aged 19 to 64 years, a single dose of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) should replace the next Td booster. A single dose of Tdap is also recommended for adults aged 65 years or more who have or anticipate having contact with children aged 12 months or less. Adults aged 65 years or more may be given a single dose of Tdap. Tdap can be administered regardless of the interval since the last tetanus or diphtheria-toxoid containing vaccine. LTC clinicians should be aware of the potential for outbreaks of pertussis among older adults, including LTC patients.

Zoster Vaccine

The CDC recommends one dose of zoster vaccine for patients aged 60 years or more. AMDA does not have a position specific to the zoster vaccine, and available data in LTC settings are limited. Anyone aged 60 years or more who does not have contraindications or use medications that compromise the immune system can be considered for vaccination.

Step 10

Implement a facility-wide infection control program that conforms to federal and state regulations and current standards of practice.

See Table 3 in the original guideline document for recommended components of an infection control program.

Step 11

Monitor the management of infections in the facility.

LTC facilities should maintain records of patients treated for an infection. Such records alone, however, are of limited utility for improving infection prevention and control. Aggregate data analysis that provides information about patterns of specific infections is much more useful.

Step 12

Monitor antibiotic use in the facility.

It is important to develop specific indications for starting antibiotics rather than starting antibiotics for vague indications. Reviewing the culture and sensitivity results, when available, also encourages appropriate prescribing of those medications and may limit the development of antibiotic-resistant organisms within the facility.

The information collected about antibiotic use should form the basis of a program to promote judicious use of antibiotics. For example, ensure that information about the use of antibiotics for symptomatic infections is included in the patient's record as part of the treatment plan. To the extent possible, minimize antibiotic use, particularly the use of broad-spectrum agents, following review of cultures or resolution of signs of infection.

Auditing Antibiotic Use

Because of increases in MDROs, review of the use of antibiotics (including comparing prescribed antibiotics with susceptibility reports) is a vital aspect of the prevention and control program. In some facilities, a more intense audit of antibiotic use may be warranted because of antibiotic resistance, or to improve the appropriateness of antibiotic prescribing.

Report the results of the audit to the facility's medical staff. When a high rate of inappropriate antibiotic use is identified, develop a plan for improvement.

Clinical Algorithm(s)

An algorithm is provided in the original guideline document for recognition, assessment, treatment, and monitoring of common infections in the long-term care setting.

Scope

Disease/Condition(s)

Common infections, including:

- Urinary tract infections
- Respiratory infections
- Gastrointestinal infections
- Skin infections

Guideline Category

Diagnosis

Evaluation

Management

Prevention

Risk Assessment

Treatment

Clinical Specialty

Family Practice

Geriatrics

Infectious Diseases

Internal Medicine

Nursing

Preventive Medicine

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Dietitians

Health Care Providers

Nurses

Occupational Therapists

Pharmacists

Physical Therapists

Physician Assistants

Physicians

Social Workers

Guideline Objective(s)

- To improve the quality of care for patients with common infections in the long-term care setting
- To guide care decisions and to define roles and responsibilities of appropriate care staff

Target Population

Residents of long-term care facilities

Interventions and Practices Considered

Diagnosis/Assessment

1. Initial nursing assessment of a suspected infection including vital signs, mental status, lung sounds, pulse oximetry, blood in urine, skin and wound examination, bowel sounds, stool and vomitus inspection, and assessment of symptoms
2. Assessment of risk factors for infection
3. History, physical examination, and appropriate laboratory tests, such as stool culture for enteric pathogens, chest X-ray, skin culture, urinalysis, urine culture and sensitivity
4. Assessing whether the patient's condition warrants transfer to a hospital
5. Assessing whether the patient's condition warrants implementation of infection control precautions (standard and transmission-based)

Management/Treatment/Prevention

1. Treating symptoms of infection including antipyretic medication (e.g., acetaminophen), monitoring nutritional status, blood glucose levels in patients with diabetes, volume depletion and electrolyte imbalance in patients with diarrhea
2. Antibiotic therapy
3. Monitoring patient's response to treatment
4. Containing an identified outbreak of the infection
5. Immunization program for all facility residents including influenza, pneumococcal, and tetanus/diphtheria/pertussis vaccination
6. Implementation of a facility-wide infection control program including hygiene practices, employee health, employee education, and environmental decontamination
7. Monitoring the management of infections in the facility using an effective infection control program
8. Monitoring antibiotic use in the facility

Major Outcomes Considered

Risk and incidence of common infections in the long-term care setting
Morbidity and mortality related to infections in long-term care settings
Incidence of transfer of patients with infections from long-term care settings to acute-care settings
Health care costs
Antibiotic resistant infections in the long-term care setting

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Medline, PubMed, and geriatric-specific journals such as the Journal of the American Medical Directors Association (JAMDA), Annals of Long Term Care, and Journal of the American Geriatrics Society (JAGS) were searched from May 2009 through February 2011. Studies were included if they met the following criteria:

- Studies that are valid, consistent, applicable and clinically relevant
- Studies where the recommendation is supported by fair evidence (based on studies that are valid, but there are some concerns about the volume, consistency, applicability and clinical relevance of the evidence that may cause some uncertainty but are not likely to be overturned by other evidence)

Searches were specific to the guideline topic under consideration.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus

Rating Scheme for the Strength of the Evidence

Not applicable

Methods Used to Analyze the Evidence

Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Original guidelines are developed by interdisciplinary workgroups, using a process that combines evidence and consensus-based approaches. Workgroups include practitioners and others involved in patient care in long-term care facilities. Beginning with pertinent literature searches for articles and information related to the guideline subject, and a draft outline/framework, each group works to make a concise, usable guideline that is tailored to the long-term care setting. Because scientific research in the long-term care population is limited, many recommendations are applied research of older adults and geriatric medicine. Some recommendations are based on the expert consensus opinion of practitioners and geriatric experts in the field.

Guideline revisions are recommended under the direction of the Clinical Practice Guideline (CPG) Steering Committee. The Steering Committee reviews any American Medical Directors Association (AMDA) guidelines that are three years old prior to an annual Steering Committee meeting to determine if the CPG is current. (A thorough literature review is done for each CPG as well to ascertain if the data within is still current.) The AMDA Clinical Practice Committee Chair selects the guidelines to be revised/created based on 1) the Steering Committee recommendations, 2) data collected, and 3) an assessment of the difficulty of development and relevance to the AMDA membership. The Board of Directors has final approval. The guideline revision process is similar to the original guideline process, except the workgroup starts with the original guideline (or last revision) as a basis to begin with.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

All American Medical Directors Association (AMDA) clinical practice guidelines undergo external review. The draft guideline is sent to approximately 175+ reviewers. These reviewers include AMDA physician members and independent physicians, specialists, and organizations that are knowledgeable of the guideline topic and the long-term care setting.

AMDA's guidelines are supported by the following associations/organizations, who are members of its Clinical Practice Guideline Steering Committee. These associations/organizations all have representatives who participate in the external review phase and officially sign off on the guideline before publication: American Association of Homes and Services for the Aging (Now LeadingAge); American College of Health Care Administrators; American Geriatrics Society; American Health Care Association; American Society of Consultant Pharmacists; Gerontological Advanced Practice Nurses Association; Direct Care Alliance; National Association of Directors of Nursing Administration in Long-Term Care; National Association of Health Care Assistants.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

The guideline was developed by an interdisciplinary workgroup using a process that combined evidence- and consensus-based approaches. Because scientific research in the long-term care population is limited, many recommendations are applied research of older adults and geriatric medicine. Some recommendations are based on the expert consensus opinion of practitioners and geriatric experts in the field.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Earlier identification and more appropriate treatment of patients with infections
- Fewer outbreaks and transmissions of infection and multidrug-resistant organisms (MDRO) within the facility
- Reduction in the use of antibiotics that fails to meet preexisting criteria for utilization
- Reduction in the number of patients with infections who are transferred to acute-care settings
- Reduction in direct and indirect patient care costs as a result of more appropriate resource utilization
- Decreased rates of influenza infection in staff
- A reduction in the inappropriate or prolonged use of transmission-based precautions
- Reduction in staff absenteeism related to reduction in healthcare-associated infection
- Reduction in *Clostridium difficile* incidence

Potential Harms

Adverse Effects of Medications

Elderly long-term care patients are at increased risk of drug-related adverse effects because of the physiologic effects of aging on kidney and liver function, the presence of comorbid conditions, and the use of multiple medications. The use of antibiotics increases the risk for potentially harmful drug interactions in addition to the adverse effects associated with antibiotics themselves, including the selection for multidrug-resistant organisms.

Qualifying Statements

Qualifying Statements

- This clinical practice guideline is provided for discussion and educational purposes only and should not be used or in any way relied upon without consultation with and supervision of a qualified physician based on the case history and medical condition of a particular patient. The American Medical Directors Association (AMDA), its heirs, executors, administrators, successors, and assigns hereby disclaim any and all liability for damages of whatever kind resulting from the use, negligent or otherwise, of this clinical practice guideline.
- The utilization of AMDA's Clinical Practice Guideline does not preclude compliance with State and Federal regulation as well as facility policies and procedures. They are not substitutes for the experience and judgment of clinicians and caregivers. The Clinical Practice

Guidelines are not to be considered as standards of care but are developed to enhance the clinician's ability to practice.

- The corporate supporters of this guideline provided funding without condition of product use, formulary status or purchasing commitment.
- Long-term care facilities care for a variety of individuals, including younger patients with chronic diseases and disabilities, short-stay patients needing postacute care, and very old and frail individuals suffering from multiple comorbidities. When a workup or treatment is suggested, it is crucial to consider if such a step is appropriate for a specific individual. A workup may not be indicated if the patient has a terminal or end-state condition, if it would not change the management course, if the burden of the workup is greater than the potential benefit, or if the patient or his or her proxy would refuse treatment. It is important to carefully document in the patient's medical record the reasons for decisions not to treat or perform a workup or for choosing one treatment approach over another.

Implementation of the Guideline

Description of Implementation Strategy

The implementation of this clinical practice guideline (CPG) is outlined in four phases. Each phase presents a series of steps, which should be carried out in the process of implementing the practices presented in this guideline. Each phase is summarized below.

I. Recognition

- Define the area of improvement and determine if there is a CPG available for the defined area. Then evaluate the pertinence and feasibility of implementing the CPG.

II. Assessment

- Define the functions necessary for implementation and then educate and train staff. Assess and document performance and outcome indicators and then develop a system to measure outcomes.

III. Implementation

- Identify and document how each step of the CPG will be carried out and develop an implementation timetable.
- Identify individual responsible for each step of the CPG.
- Identify support systems that impact the direct care.
- Educate and train appropriate individuals in specific CPG implementation and then implement the CPG.

IV. Monitoring

- Evaluate performance based on relevant indicators and identify areas for improvement.
- Evaluate the predefined performance measures and obtain and provide feedback.

Table 13 in the original guideline suggests sample performance measurement indicators (outcome indicators and process indicators).

Implementation Tools

Audit Criteria/Indicators

Clinical Algorithm

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Safety

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2004 (revised 2011)

Guideline Developer(s)

American Medical Directors Association - Professional Association

Guideline Developer Comment

Organization participants included:

- American Association of Homes and Services for the Aging
- American College of Health Care Administrators
- American Geriatrics Society
- American Health Care Association
- American Society of Consultant Pharmacists
- Direct Care Alliance
- Gerontological Advanced Practice Nurses Association
- National Association of Directors of Nursing Administration in Long-Term Care
- The American Medical Directors Association (AMDA) Foundation

Source(s) of Funding

American Medical Directors Association

GOJO Industries Inc. is a corporate sponsor of this guideline.

Guideline Committee

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Financial Disclosures/Conflicts of Interest

All contributors must submit an Accreditation Council for Continuing Medical Education (ACCME) approved disclosure form prior to being accepted as a volunteer member of the guideline workgroup. This disclosure form is reviewed by the chair of the American Medical Directors Association (AMDA) Clinical Practice Committee. If any conflicts are perceived, that person is not accepted to be part of the workgroup.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: American Medical Directors Association (AMDA). Common infections in the long-term care setting. Columbia (MD): American Medical Directors Association (AMDA); 2004. 34 p.

Guideline Availability

Electronic copies: Not available at this time.

Print copies: Available from the American Medical Directors Association, 10480 Little Patuxent Pkwy, Suite 760, Columbia, MD 21044.

Telephone: (800) 876-2632 or (410) 740-9743; Fax (410) 740-4572. Web site: www.amda.com

Availability of Companion Documents

Table 13 in the original guideline document provides sample performance measurement indicators.

Appendix B contains the Centers for Disease Control and Prevention (CDC) recommendations for handwashing and hand antisepsis.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI on March 14, 2005. The information was verified by the guideline developer on April 19, 2005. This NGC summary was updated by ECRI Institute on October 31, 2011. The updated information was verified by the guideline developer on November 29, 2011. This summary was updated by ECRI Institute on October 28, 2013 following the U.S. Food and Drug Administration advisory on Acetaminophen.

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